

# **Artificial Intelligence for Remote Sensing Data Analysis: A review of challenges and opportunities**

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## **Abstract**

Artificial intelligence (AI) plays a growing role in remote sensing (RS). Applications of AI, particularly machine learning algorithms, range from initial image processing to high-level data understanding and knowledge discovery. AI techniques have emerged as a powerful strategy for analyzing RS data and led to remarkable breakthroughs in all RS fields. Given this period of breathtaking evolution, this work aims to provide a comprehensive review of the recent achievements of AI algorithms and applications in RS data analysis. The review includes more than 270 research papers, covering the following major aspects of AI innovation for RS: machine learning, computational intelligence, AI explicability, data mining, natural language processing (NLP), and AI security. We conclude this review by identifying promising directions for future research.